

# Subpart I: Best Available Monitoring Methods

## Greenhouse Gas Reporting Program

April 12, 2011

*This fact sheet is designed to provide clarification on the provisions related to the use of best available monitoring methods (BAMM) under Subpart I: Electronics Manufacturing. This fact sheet is divided into two sections: General BAMM process information and BAMM implementation information.*

### **GENERAL BAMM PROCESS INFORMATION**

Any owner or operator of a facility subject to Subpart I of 40 CFR Part 98 may use Best Available Monitoring Methods (BAMM) to estimate emissions that occur through June 30, 2011 for any parameter for which it is not reasonably feasible to achieve the following by January 1, 2011:

1. Acquire, install, or operate a required piece of monitoring equipment, or
2. Procure necessary measurement services.

You do not need to submit a request to EPA to use BAMM unless you are planning to use it when estimating emissions that occur beyond June 30, 2011.

To request to use BAMM to estimate emissions that occur from July 1, 2011 through December 31, 2011, you must submit a request to EPA by June 30, 2011 (for recipe-specific utilization and by-product formation rates for the plasma etching process type). You may use the Subpart I optional BAMM form to submit your request. The optional form is available at:  
<http://www.epa.gov/climatechange/emissions/ghgrulemaking.html>.

Per §98.94(a)(1), BAMM could include the following:

- Monitoring methods currently used by a facility that do not meet the specifications of Subpart I;
- Supplier data;
- Engineering calculations; or
- Other company records.

**When a facility uses BAMM to comply with specific monitoring provisions in Subpart I, it must use the calculation methodologies and equations in §98.93, but MAY USE alternate means of estimating the inputs to those equations, i.e. the parameters used in calculating emissions may be substituted with values determined using BAMM.**

**For which provisions can BMM be used and/or requested and for which time period can I use BMM under Subpart I?**

BMM may only be used for applicable monitoring and QA/QC requirements for parameters with which it is not reasonably feasible for the facility to comply. Consequently, requests for the use of BMM to estimate emissions that occur beyond June 30, 2011 should only be made for applicable monitoring and QA/QC requirements in Subpart I, and not for requirements related to those parameters that are not monitoring and QA/QC requirements (e.g., reporting and recordkeeping requirements).

The table below summarizes the parameters for which BMM can be requested, and the timeline for using and/or requesting the use of BMM.

<b>Parameter (Subpart I Monitoring and QA/QC Provision in §98.94)</b>	<b>Is Automatic BMM Available?</b>	<b>Can I request to use BMM for all of 2011?</b>	<b>Can I request to use BMM to estimate emissions that occur after December 31, 2011?</b>
Parameters other than recipe-specific utilization and by-product formation rates for the plasma etching process type.  <i>(e.g., facility-wide gas- specific heel factors, gas apportioning factors)</i>	<b>Yes.</b> You do not need to submit a request and obtain approval to use BMM to estimate emissions that occur from January 1 to June 30, 2011.	<b>Yes.</b> A petition must have been submitted by <b>February 28, 2011</b> requesting to use BMM to estimate emissions that occur beyond June 30, 2011.  For parameters identified in the petition, you must have demonstrated that it is not reasonably feasible to comply with the related monitoring or QA/QC requirements of subpart I before July 1, 2011.	<b>Yes.</b> You must submit a request to use BMM to estimate emissions that occur beyond December 31, 2011 <b>by June 30, 2011.</b>  You must demonstrate that due to extreme and unique circumstances, it is not reasonably feasible to comply with the monitoring or QA/QC requirements of subpart I before December 31, 2011.
Recipe-specific utilization and by-product formation rates for the plasma etching process type.	<b>Yes.</b> You do not need to submit a request and obtain approval to use BMM to estimate emissions that occur from January 1 to June 30, 2011.	<b>Yes.</b> You must submit a request to use BMM to estimate emissions that occur beyond June 30, 2011 by <b>June 30, 2011.</b>  You must demonstrate that it is not reasonably feasible to comply with the monitoring or QA/QC requirements of subpart I before December 31, 2011.	<b>Yes.</b> You must submit a request to use BMM to estimate emissions that occur beyond December 31, 2011 <b>by June 30, 2011.</b>  You must demonstrate that due to extreme and unique circumstances, it is not reasonably feasible to comply with the monitoring or QA/QC requirements of subpart I. before December 31, 2012.

### **Who should submit the request to use BAMM?**

For those facilities that have already registered with EPA and for which a certificate of representation (COR) has been submitted pursuant to §98.4(i), the designated representative (DR), any alternative designated representatives (ADR) or an agent included in the COR must submit the BAMM request.

If a complete COR has not yet been submitted for a facility (e.g., for those facilities first reporting in 2012, the COR is not due until January 31, 2012) then the BAMM request can be submitted by any person at the facility who can make the certification statements in §98.4(i)(4) on behalf of the facility.

### **Can a company or industry association submit a request for the use of BAMM request on behalf of multiple facilities?**

Yes. Companies and industry associations may submit a single BAMM request for multiple facilities as long as the required facility-specific information is provided. The application must contain facility-specific information detailing why each facility is unable to comply with the monitoring requirements of the subpart. EPA also will consider submission of industry or member-wide information that is submitted to supplement or support the facility-specific BAMM request. After submittal, the owner or operator of each facility will be notified in writing by EPA when a decision has been made regarding whether a request for extension has been approved or denied.

## **BAMM IMPLEMENTATION INFORMATION**

### **If a facility is allowed to use BAMM, what methods should it follow for calculating and reporting greenhouse gas emissions?**

When a facility is approved to use BAMM to comply with specific monitoring or QA/QC provisions in Subpart I, the facility **MUST** estimate its emissions using the calculation methodologies and equations in the rule (§98.93), but the facility **MAY USE** alternate means of estimating the inputs to those equations.

You do not need to separately request and obtain approval to use BAMM for calculation, reporting, and recordkeeping requirements where BAMM is used to monitor one or more of the equation inputs. EPA recognizes that when a facility is approved to use BAMM to monitor certain parameters, the values for those parameters that will be used in the calculations and the information that will be reported or kept as records will be based on the BAMM used by the facility.

For example, if a facility has been approved for the use of BAMM for the measurement accuracy and precision requirements in §98.94(i), it must still use the calculation procedures outlined in §98.93(c) and (d) and Equations I-11 (annual gas consumption) and I-12 (gas disbursements). To do so, the facility will have to estimate all inputs to these equations, but may use BAMM to measure one or more of the input parameters for annual gas consumption and disbursements. Such BAMM could include, for example, the use of scales with an accuracy and precision of  $\pm 2\%$  of full scale rather than the  $\pm 1\%$  of full scale required by §98.94(i), if these were the most accurate and precise scales available at the time. Those

inputs, regardless of whether they were estimated using BMM, must be reported per requirements in §98.96 and records must be kept of them per §98.97.<sup>1</sup>

Note, per §98.96(t), the following information is required to be reported about the use of BMM:

- A brief description of each BMM used,
- The parameter measured or estimated using the method, and
- The time period during which the BMM was used.

**How should a facility estimate the amount of gas consumed for each recipe, process sub-type or process type (i.e., apportioning factors), if it is approved to use BMM to comply with §98.94(c): development and verification of facility-specific engineering models for apportioning gas consumption?**

If a facility is approved to use BMM to comply with §98.94(c), it may use best available monitoring methods to estimate apportioning factors for gas consumption. For example, a facility may use existing models or databases that reflect gas usage based on tool, product, or recipe information to estimate gas apportioning factors.

More specific examples may include, but are not limited to, the following:

- Tool-based calculations to estimate gas consumption at the tool level based on the maximum production capacity of each process tool;
- Product-based calculations to quantify gas consumption for the series of manufacturing steps corresponding to a particular type of product manufactured; or
- Recipe-based calculations based on the amount of fluorinated GHG consumed for each recipe, summing up the consumption over the number of recipes run for a given period.

Once apportioning factors for each gas are estimated, a facility would then apply them to the total consumption for each gas, per equation I-13, to determine consumption by process type, sub-type, or recipe.

**How is BMM related to the site GHG Monitoring Plan (§98.3(g)(5))?**

If a facility requests and is approved to use BMM for specific monitoring requirements in subpart I, it doesn't also need to request the use of BMM for its GHG Monitoring Plan; rather, the use of BMM should be reflected in a facility's site GHG Monitoring Plan. Facility data collection methods will change and evolve as the facility moves from BMM to required monitoring methods, acquires more experience with monitoring procedures and equipment, and develops more effective procedures for data management. Site GHG Monitoring Plans must be revised to reflect these changes. Per §98.97(h), all electronics manufacturing facilities subject to Subpart I must develop a GHG Monitoring Plan by April 1, 2011. Monitoring Plans **DO NOT** need to be submitted to EPA for approval; rather, they must be kept on site as records.

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<sup>1</sup> EPA has proposed to defer reporting of data elements used as inputs to emission equations (75 FR 81350, December 27, 2010). Reporting under Subpart I will be consistent with the final rule.

If a facility is approved to use BAMM to comply with §98.94(c) through December 31, 2011, the facility's April 1, 2011 Monitoring Plan does not need to document the facility-specific engineering model used to apportion fluorinated GHG and N<sub>2</sub>O consumption. Rather, model documentation must be included in the facility's Monitoring Plan by the end of the reporting period for which the facility is required to verify its facility-specific engineering model.

Please note that there is no requirement to notify EPA when a facility or supplier no longer uses BAMM and fully complies with the methods outlined in the rule. The facility's Monitoring Plan should reflect the methods and procedures that are being used to calculate GHG emissions in the current reporting year.

### **Will EPA provide a template for the site GHG Monitoring Plans and review Plans?**

At this time, EPA has no plans to specify a GHG Monitoring Plan template because the Agency wants to provide facilities with the flexibility to rely on references to existing corporate maintenance plans, operating procedures, quality assurance plans, and other documents, including those prepared under other rules (e.g., acid rain, New Source Performance Standards). However, the GHG Monitoring Plan must include all of the elements listed in 40 CFR 98.3(g)(5)(i) of the rule. Plans will not be reviewed by EPA unless EPA requests such a review as part of an audit.

### **For More Information**

This document is provided solely for informational purposes. It does not provide legal advice, have legally binding effect, or expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits in regard to any person. The series of information sheets is intended to assist reporting facilities/owners in understanding key provisions of the final rule.

Visit EPA's Web site ([www.epa.gov/climatechange/emissions/ghgrulemaking.html](http://www.epa.gov/climatechange/emissions/ghgrulemaking.html)) for more information, including the final preamble and rule, additional information sheets on specific industries, the schedule for training sessions, and other documents and tools. For questions that cannot be answered through the Web site, please contact us at: [ghgmrr@epa.gov](mailto:ghgmrr@epa.gov).